

Gulco Marine Maintenance Superfund Site

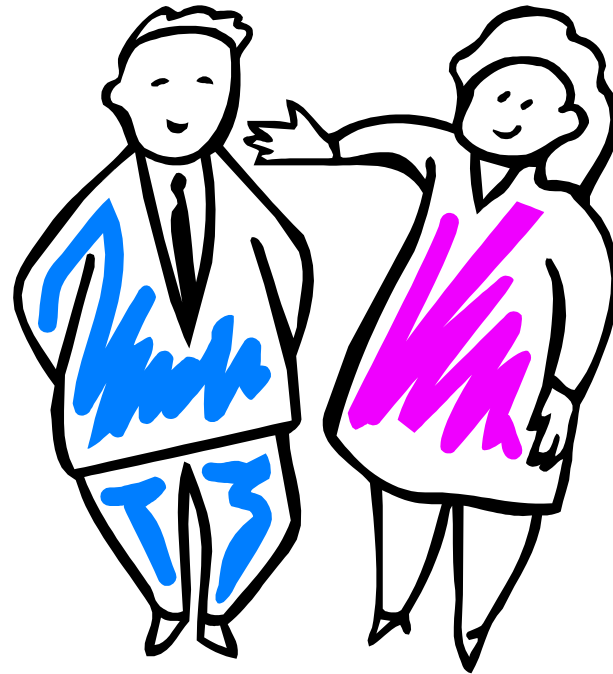
Wetland Sediment Hot Spot
Remediation Meeting

May 17, 2010

Agenda

- Introductions
- Meeting Objectives
- Wetland Sediment Hot Spot Remediation Proposal Review
- Risk Management Considerations for Other Media/Areas
- Possible Next Steps

Introductions



Meeting Objectives

- Review/Evaluate/Refine Wetland Hot Spot Remediation Proposal
- Discuss Risk Management Considerations for Other Media/Areas
- If Proposal Seems Acceptable, Identify Next Steps

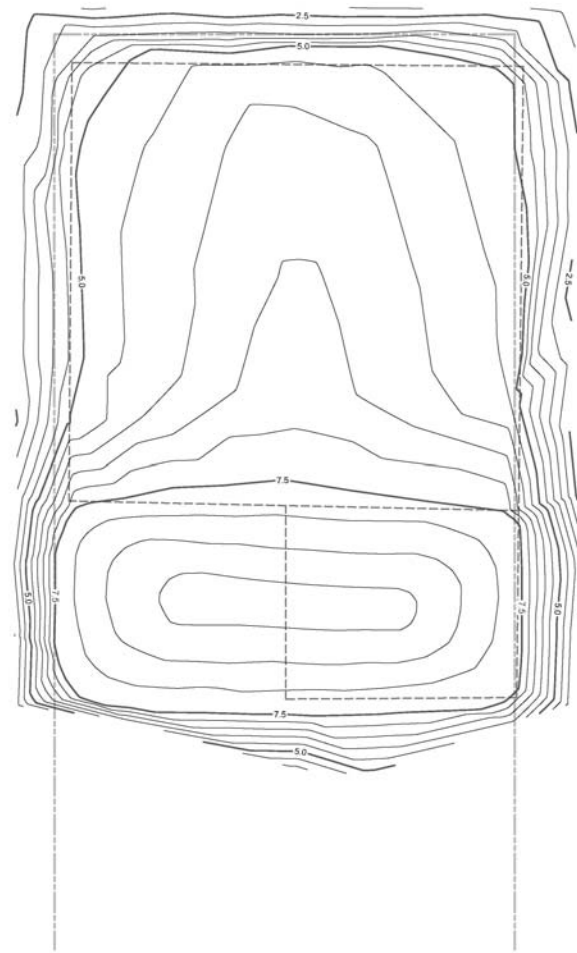
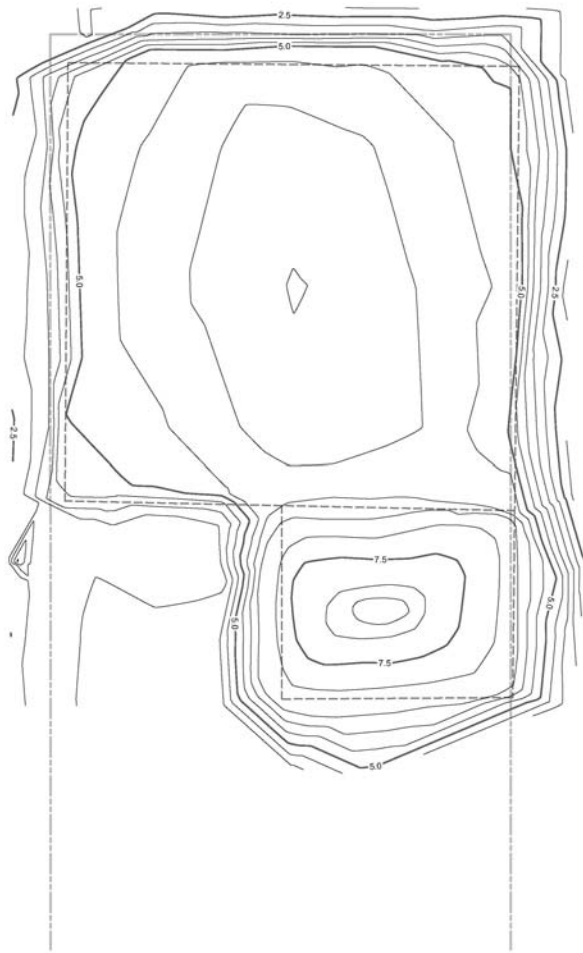
Wetland Sediment Hot Spot Remediation Proposal Overview

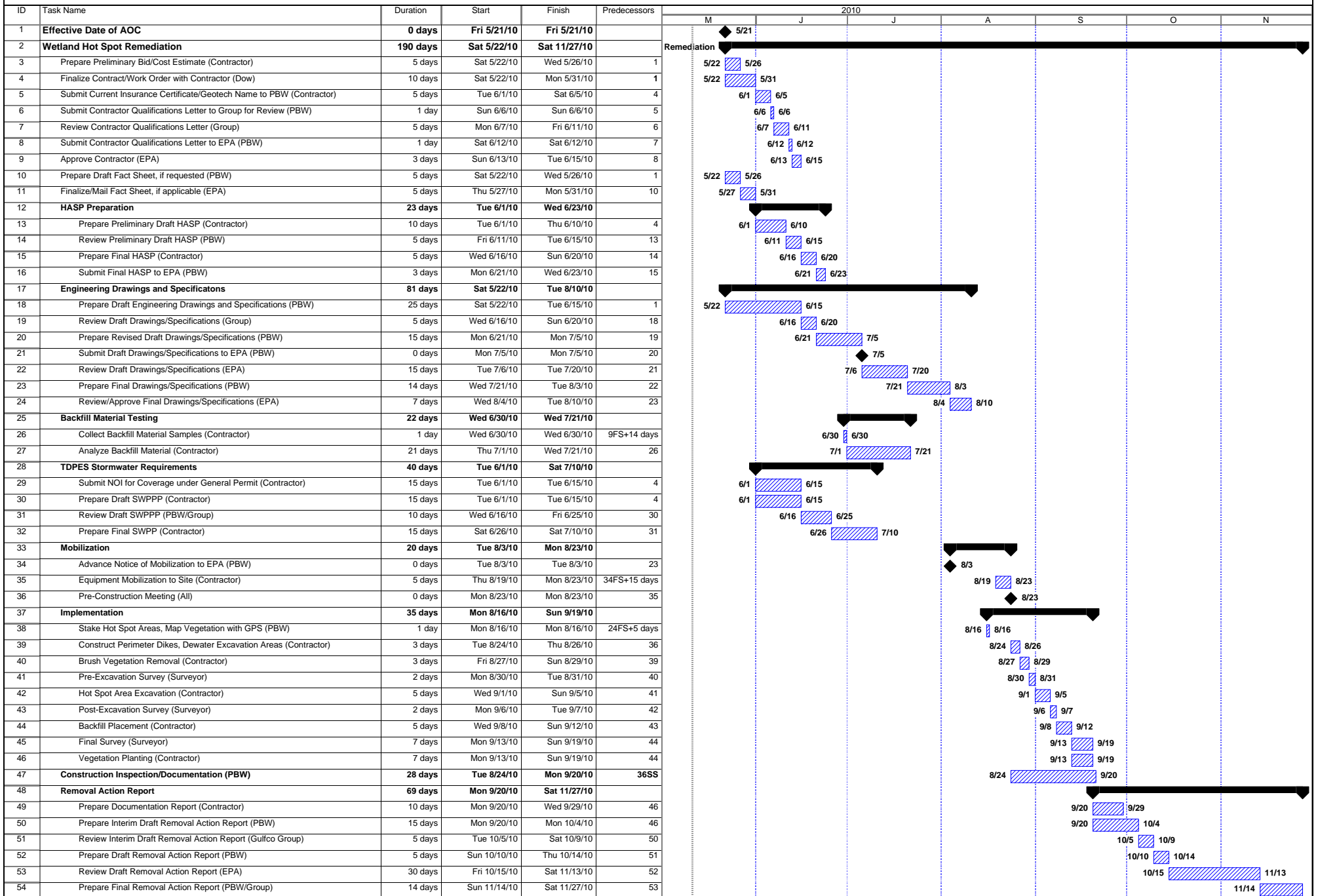
- Performed under Removal Action AOC for Tank Farm Removal / Former Surface Impoundments Cap Repair
- Could be Started Promptly – AOC about to be finalized
- Could be Completed Quickly – Concurrent with Cap Repair Schedule

Wetland Sediment Hot Spot Remediation Proposal Description

- Sediment Excavation to 1 ft Depth
- Excavated Sediment Placement under Cap or Disposed Off-Site
- Excavation Backfilling with Imported Material
- Vegetation Restoration

Under Cap Placement Considerations





Identification of Hot Spot Areas

- Overarching Consideration – No higher trophic level HQs >1 for wetland sediment
- Hot Spot Identification Criteria:
Exceedence of Midpoint between Effects Range - Low (ERL) and Effects Range - Medium (ERM); or Apparent Effects Threshold (AET) if no ERL and ERM

Identification of Hot Spot Areas

- Preliminary Proposed Areas in April 29 Work Plan
 - Areas A and B northeast of former surface impoundments
 - Area C immediately north of Marlin Ave
- GIS/Database Query (“rubber band”) Evaluation







EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Sediment Sample Location
- A Preliminary Proposed Sediment Hot Spot Remediation Area (Subject to Discussion in EPA Review Meeting)

Notes:

1. Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
2. BGS = below ground surface.
3. Total PAH concentrations were calculated using 1/2 of the sample detection limit as a proxy value for undetected PAHs.
4. Values shown on this figure exceed the midpoint of the ERL and ERM. Highlighted values exceed the ERM or AET.
- + Value exceeds Apparent Effects Threshold (AET). No ERL or ERM was available.

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Acenaphthylene	0.346J	0.342	0.64
0-0.5	Benzo(g,h,i)perylene	1.52	-	0.67+
0-0.5	Dibenz(a,h)anthracene	2.83	0.162	0.26
0-0.5	Indeno(1,2,3-cd)pyrene	1.59	-	0.6+
0-0.5	Total HPAH	10.392	5.65	9.6

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Benzo(g,h,i)perylene	0.749	-	0.67+

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Benzo(g,h,i)perylene	0.897	-	0.67+
0-0.5	Dibenz(a,h)anthracene	1.83	0.162	0.26
0-0.5	Indeno(1,2,3-cd)pyrene	0.863	-	0.6+

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Acenaphthylene	0.545J	0.342	0.64
0-0.5	Benzo(g,h,i)perylene	1.94	-	0.67+
0-0.5	Chrysene	4.05	1.59	2.8
0-0.5	Dibenz(a,h)anthracene	2.91	0.162	0.26
0-0.5	Indeno(1,2,3-cd)pyrene	1.94	-	0.6+
0-0.5	Total HPAH	13.931	5.65	9.6

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
1-2	2-Methylnaphthalene	0.43	0.37	0.67

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Benzo(a)anthracene	0.993	0.93	1.6
0-0.5	Benzo(a)pyrene	1.3J	1.02	1.6
0-0.5	Benzo(g,h,i)perylene	0.862J-	-	0.67+
0-0.5	Dibenz(a,h)anthracene	0.337J-	0.162	0.26
0-0.5	Indeno(1,2,3-cd)pyrene	1.1	-	0.6+
0-0.5	Phenanthrene	1.3	0.87	1.5
0-0.5	Pyrene	1.64J-	1.63	2.6
0-0.5	Zinc	601	280	410
0-0.5	Total HPAH	11.762	5.65	9.6

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Zinc	290J	280	410

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Indeno(1,2,3-cd)pyrene	0.655J	-	0.6+
0-0.5	Zinc	539	280	410

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Dibenz(a,h)anthracene	0.312	0.162	0.26
0-0.5	Indeno(1,2,3-cd)pyrene	0.752	-	0.6+
0-0.5	Lead	237	132	218
0-0.5	Phenanthrene	1.18	0.87	1.5
0-0.5	Zinc	404	280	410
0-0.5	Total HPAH	7.531	5.65	9.6

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Zinc	903	280	410

Depth (ft BGS)	Chemical of Interest	Conc. (mg/Kg)	ERL/ERM midpoint (mg/Kg)	ERM (mg/Kg)
0-0.5	Zinc	319J	280	410

DRAFT

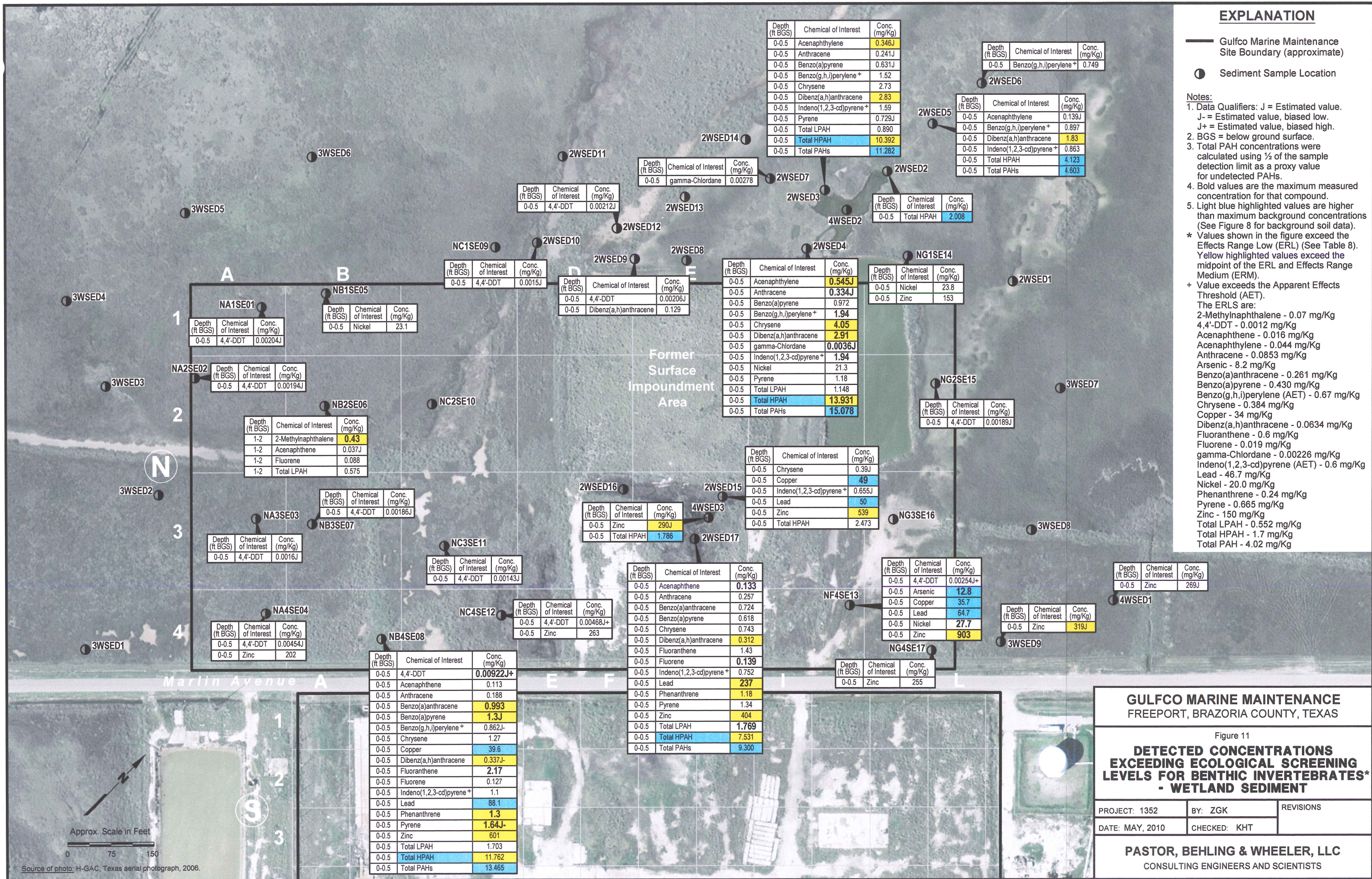
GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 3
**DETECTED WETLAND SEDIMENT
CONCENTRATIONS EXCEEDING
ERL/ERM MIDPOINT AND PROPOSED
SEDIMENT HOT REMEDIATION AREA**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: APRIL, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Source of photo: H-GAC, Texas aerial photograph, 2006



Risk Management Considerations for Other Media/Areas

- South Area Soils
- North Area Soils
- Intracoastal Waterway Sediments
- Ponds Sediments
- Wetlands Surface Water
- Ponds Surface Water

South Area Soils Risk Management Considerations

- No higher trophic level receptor HQs >1
- Restrictive covenant for commercial/industrial land use only
- Much of South Area highly disturbed (dry dock, driveways, slabs, etc.)
- Areas of non-metal screening levels exceedences associated with engineered fill (dry dock, driveways)











EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow Soil Sample (0-2 ft)
- Shallow (0-2 ft) and Deep (4-5 ft) Soil Sample

Notes:

1. Data Qualifier: J = Estimated value.
2. BGS = below ground surface.
3. Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
4. Bold values are the maximum measured concentration for that compound.

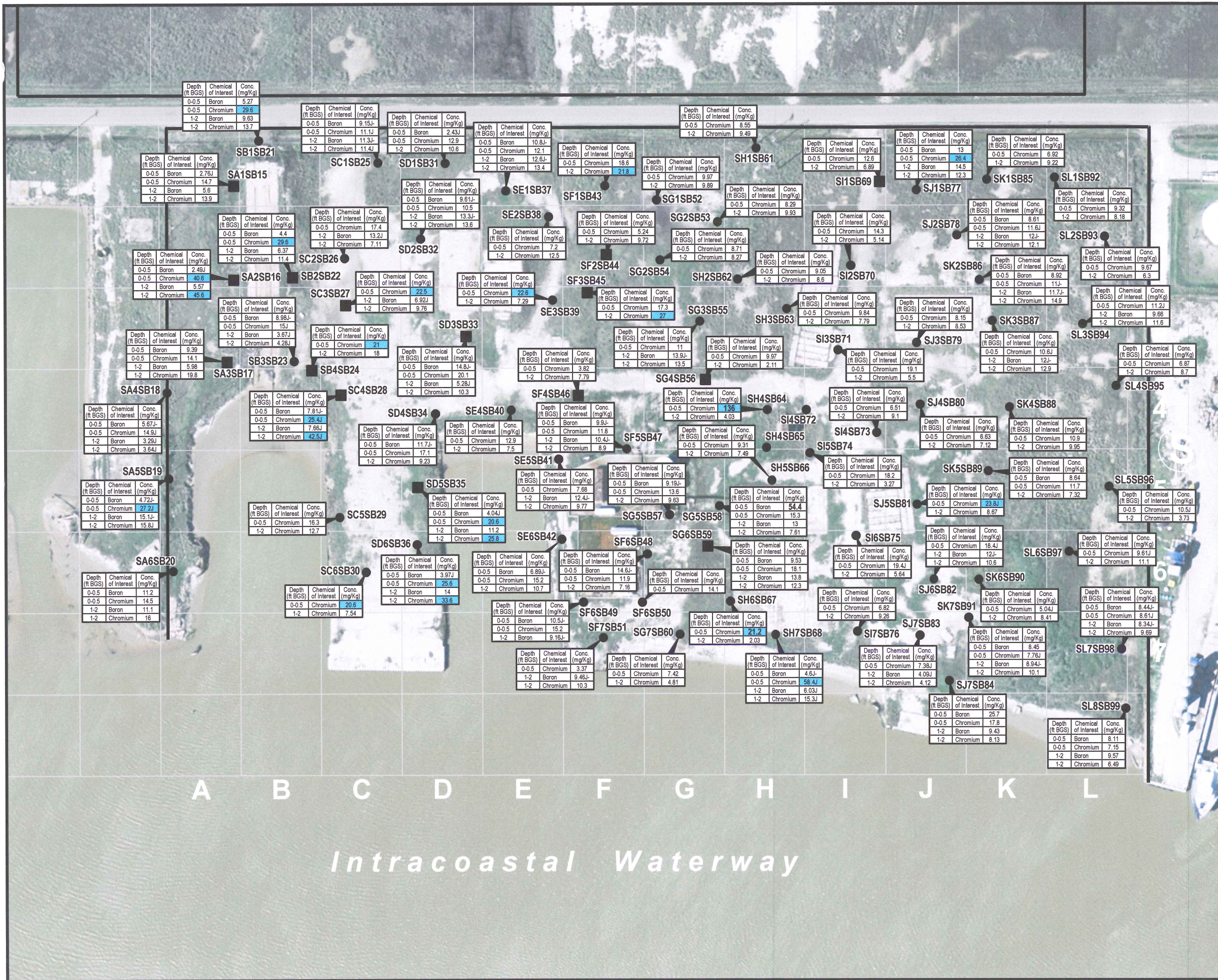
* The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 1 & 2). The screening levels are:
Antimony - 0.27 mg/kg
4,4'-DDT - 0.021 mg/kg
Zinc - 46 mg/kg
Total LPAH - 29 mg/Kg
Total HPAH - 1.1 mg/Kg

GULFCO MARINE MAINTENANCE FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 6A
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES*
- SOUTH AREA SOIL**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow Soil Sample (0-2 ft)
- Shallow (0-2 ft) and Deep (4-5 ft) Soil Sample

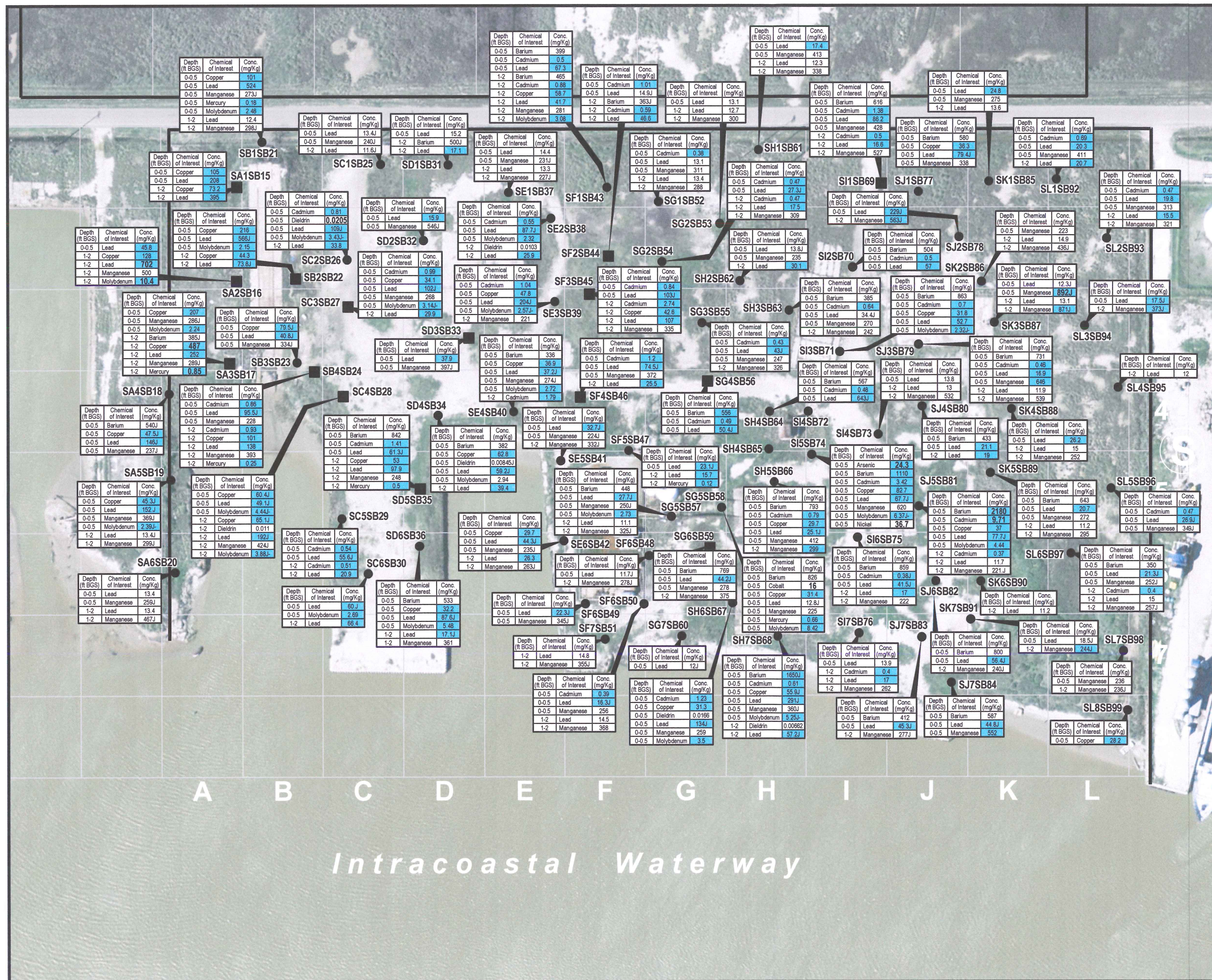
Notes:
1. Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
2. BGS = below ground surface.
3. Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
4. Bold values are the maximum measured concentration for that compound.
* The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 1 & 2).
The screening levels are:
Boron - 0.5 mg/Kg
Chromium - 0.4 mg/Kg

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 6B
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES*
- SOUTH AREA SOIL**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow Soil Sample (0-2 ft)
- Shallow (0-2 ft) and Deep (4-5 ft) Soil Sample

Notes:

- Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
 - BGS = below ground surface.
 - Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
 - Bold values are the maximum measured concentration for that compound.
- * The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 1 & 2).
The screening levels are:
Arsenic - 18 mg/Kg
Barium - 330 mg/Kg
Cadmium - 0.36 mg/Kg
Copper - 28 mg/Kg
Dieldrin - 0.0049 mg/Kg
Lead - 11 mg/Kg
Manganese - 220 mg/Kg
Mercury - 0.1 mg/Kg
Molybdenum - 2 mg/Kg
Nickel - 30 mg/Kg

Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 6C
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES***
- SOUTH AREA SOIL

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



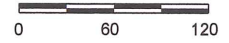
EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow Soil Sample (0-2 ft)
- Shallow (0-2 ft) and Deep (4-5 ft) Soil Sample

Notes:
1. Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
2. BGS = below ground surface.
3. Bold values are the maximum measured concentration for that compound.
* The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 1 & 2).
The screening levels are:
Lithium - 2 mg/Kg
Vanadium - 2 mg/Kg



Approx. Scale in Feet



Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE FREEPORT, BRAZORIA COUNTY, TEXAS

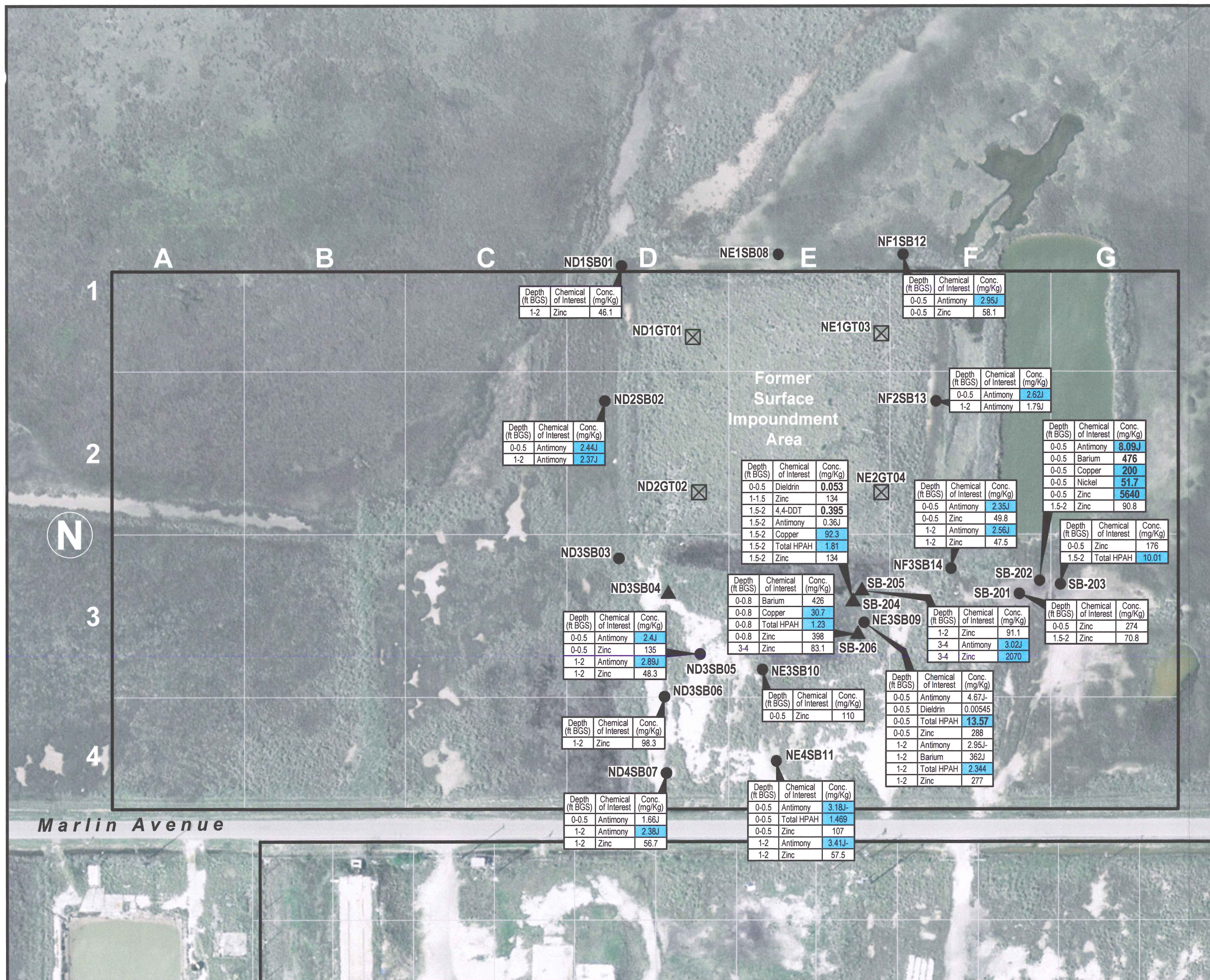
Figure 6D DETECTED CONCENTRATIONS EXCEEDING ECOLOGICAL SCREENING LEVELS FOR SOIL INVERTEBRATES* - SOUTH AREA SOIL

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

North Area Soil Risk Management Considerations

- No higher trophic level receptor HQs >1
- Restrictive covenant for commercial/industrial land use only
- Much of North Area soils primarily former parking lot – fill with gravel/crushed oyster shell
- Areas with screening level exceedences adjacent to cap area will be covered by cap upgrade



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow (0-2 ft) Soil Sample
- ▲ Shallow (0-2 ft) and Deep (4+ ft) Soil Sample
- ☒ Geotechnical Soil Boring

Notes:

- Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
 - BGS = below ground surface.
 - Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
 - Bold values are the maximum measured concentration for that compound.
- * The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 3 & 4).
The screening levels are:
Antimony - 0.27 mg/Kg
Barium - 330 mg/Kg
Copper - 28 mg/Kg
Dieldrin - 0.0049 mg/Kg
Nickel - 30 mg/Kg
Total HPAH - 1.1 mg/Kg
Zinc - 46 mg/Kg

Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 7A
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES***
- NORTH AREA SOIL

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow (0-2 ft) Soil Sample
- ▲ Shallow (0-2 ft) and Deep (4+ ft) Soil Sample
- ⊠ Geotechnical Soil Boring

Notes:

1. Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
2. BGS = below ground surface.
3. Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
4. Bold values are the maximum measured concentration for that compound.

* The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 3 & 4).

The screening levels are:
Boron - 0.5 mg/Kg
Chromium - 0.4 mg/Kg
Lithium - 2 mg/Kg
Vanadium - 2 mg/Kg



Approx. Scale in Feet

0 60 120

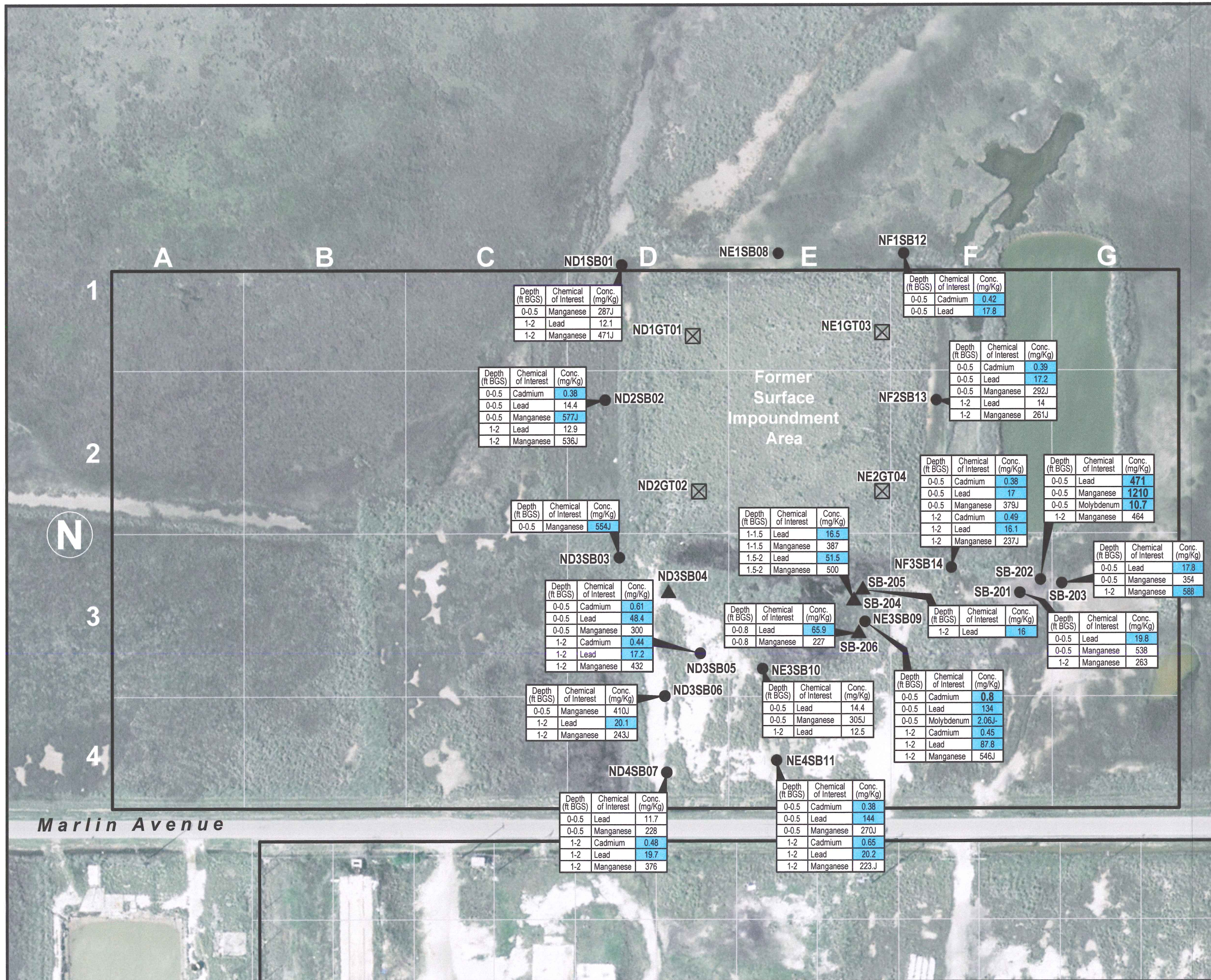
Source of photo: H-GAC, Texas aerial photograph, 2006.

**GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS**

Figure 7B
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES*
- NORTH AREA SOIL**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Shallow (0-2 ft) Soil Sample
- ▲ Shallow (0-2 ft) and Deep (4+ ft) Soil Sample
- ⊠ Geotechnical Soil Boring

Notes:

1. Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
2. BGS = below ground surface.
3. Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for background soil data).
4. Bold values are the maximum measured concentration for that compound.

* The compounds shown in the figure are the compounds that were detected at a concentration greater than the screening level (See Tables 3 & 4).
The screening levels are:
Cadmium - 0.36 mg/Kg
Lead - 11 mg/Kg
Manganese - 220 mg/Kg
Molybdenum - 2 mg/Kg



Source of photo: H-GAC, Texas aerial photograph, 2006.

**GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS**

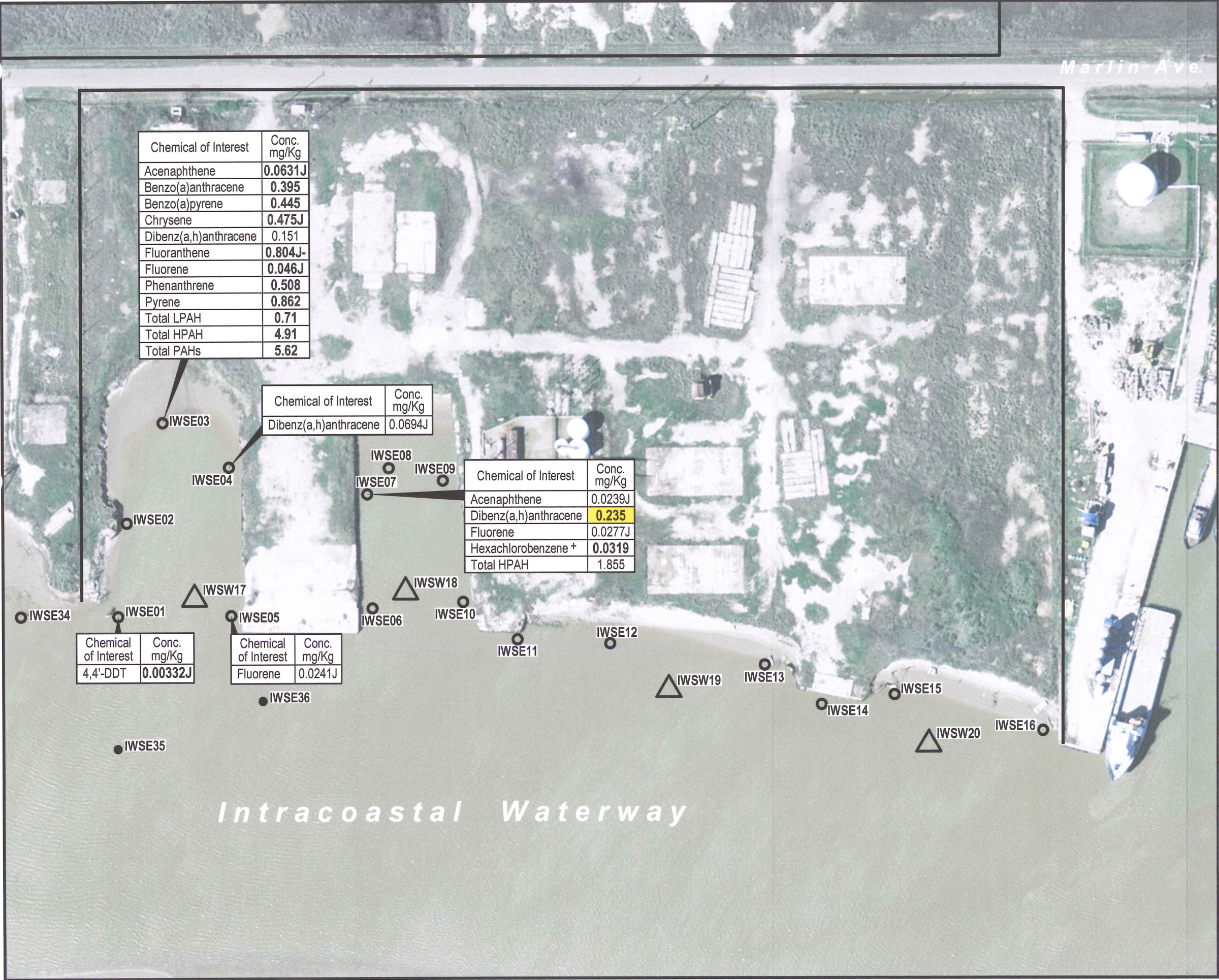
Figure 7C
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR SOIL INVERTEBRATES*
- NORTH AREA SOIL**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Intracoastal Waterway Sediments Risk Management Considerations

- No higher trophic level receptor HQs >1
- One location with ERL-ERM midpoint or AET exceedence (IWSE07)
- Two exceedences at IWSE07
- Total LPAH, HPAH and PAH below ERL-ERM midpoint at IWSE07



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Intracoastal Waterway Sediment Sample
- Intracoastal Waterway Surface Water Sample
- Attempted Intracoastal Waterway Sediment Sample (not enough sediment present to allow for sampling)

Notes:

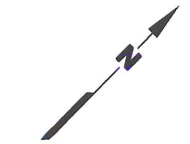
- Data Qualifiers: J = Estimated value.
J- = Estimated value, biased low.
- Total PAH concentrations were calculated using 1/2 of the sample detection limit as a proxy value for undetected PAHs.
- Bold values are the maximum measured concentration for that compound.

* Values shown in the figure exceed the Effects Range Low (ERL) (See Table 6). Yellow highlighted values exceed the midpoint of the ERL and Effects Range Medium (ERM).

+ Value exceeds the Apparent Effects Threshold (AET).

The ERLs are:

- 4,4'-DDT - 0.0012 mg/Kg
- Acenaphthene - 0.016 mg/Kg
- Benzo(a)anthracene - 0.261 mg/Kg
- Benzo(a)pyrene - 0.430 mg/Kg
- Chrysene - 0.384 mg/Kg
- Dibenz(a,h)anthracene - 0.0634 mg/Kg
- Fluoranthene - 0.6 mg/Kg
- Fluorene - 0.019 mg/Kg
- Hexachlorobenzene (AET) - 0.006 mg/Kg
- Phenanthrene - 0.24 mg/Kg
- Pyrene - 0.665 mg/Kg
- Total LPAH - 0.552 mg/Kg
- Total HPAH - 1.7 mg/Kg
- Total PAH - 4.02 mg/Kg



Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 9
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR BENTHIC INVERTEBRATES*
-INTRACOASTAL WATERWAY SEDIMENT**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Ponds Sediment Risk Management Considerations

- No upper trophic level receptor HQs >1
- Only ERL-ERM midpoint exceedences are zinc in Small Pond samples
- 2 of 3 Small Pond zinc concentrations below background maximum (3rd is 999 mg/kg; background max is 969 mg/kg)



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Pond Sediment Sample Location

Notes:
1. All samples from 0-0.5 ft depth interval.
2. Data Qualifiers: J = Estimated value.
3. Bolded values are the maximum measured concentration for that compound.
4. Light blue highlighted values are higher than maximum background concentrations (See Figure 8 for soil background data).
* Values shown in the figure exceed the Effects Range Low (ERL) (See Table 9). Yellow highlighted values exceed the midpoint of the ERL and Effects Range Medium (ERM).
The ERLs are:
4,4'-DDT - 0.0012 mg/kg
Zinc - 150 mg/kg



Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 12
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR BENTHIC INVERTEBRATES*
- PONDS SEDIMENT**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Wetlands Surface Water Risk Management Considerations

- No higher trophic level receptor HQs >1
- Two 2 COPECs exceed surface water quality criteria
 - Copper: 3 exceedences below ICWW background
 - Acrolein: sole detection
- North exceedence areas addressed by wetland hot spot remediation
- South exceedence area will be under repaired cap



EXPLANATION

- Gulfco Marine Maintenance Site Boundary (approximate)
- Wetland Surface Water Sample Location

- Notes:**
- 1. Data Qualifier: J = Estimated value.
 - 2. Light blue highlighted values exceed concentrations measured in background surface water (See Figure 13 for background surface water concentrations).
 - 3. Bolded values are the maximum measured concentration for that compound.
 - * Values shown in the figure exceed the TCEQ Ecological Benchmark for Water (See Tables 12 & 16).



Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 14
**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR AQUATIC RECEPTORS*
- WETLAND SURFACE WATER**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2010	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Ponds Surface Water Risk Management Considerations

- No higher trophic level HQs >1
- Silver only COPEC measured above surface water quality criteria
- All silver Pond concentrations below ICWW background silver concentrations



Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.0027J

FWPSW01

Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.0021J

FWPSW02

Fresh Water Pond

FWPSW03

Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.0029J

Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.00095J

SPSW01

Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.00094J

SPSW02

SPSW03

Chemical of Interest	Conc. (mg/L)
Dissolved Silver	0.0014J

Small Pond

EXPLANATION

— Gulfco Marine Maintenance Site Boundary (approximate)

△ Pond Surface Water Sample Location

Notes:

1. Data Qualifier: J = Estimated value.
 2. Bolded values are the maximum measured concentration for that compound.
 3. No compounds were measured above background concentrations (See Figure 13 for background surface water concentrations).
- * Values shown in the figure exceed the TCEQ Ecological Benchmark for Water (See Tables 13 & 17).



Approx. Scale in Feet

0 60 120

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 15

**DETECTED CONCENTRATIONS
EXCEEDING ECOLOGICAL SCREENING
LEVELS FOR AQUATIC RECEPTORS*
- PONDS SURFACE WATER**

PROJECT: 1352

BY: ZGK

REVISIONS

DATE: MAY, 2010

CHECKED: KHT

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Possible Next Steps

- Review/comment on proposed AOC additions for wetland sediment hot spot remediation
- Review/comment on draft wetland sediment hot spot remediation work plan
- Others?